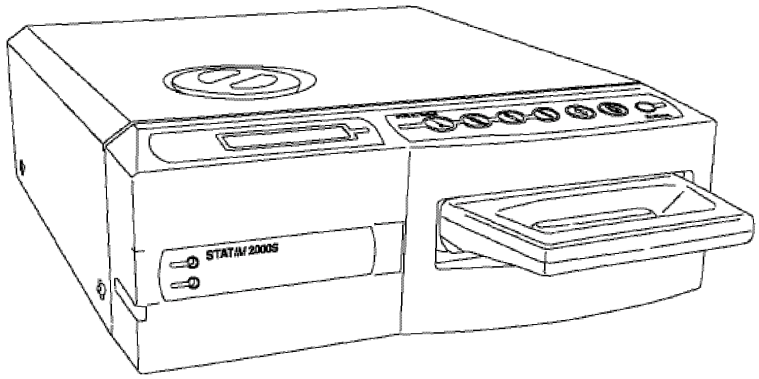
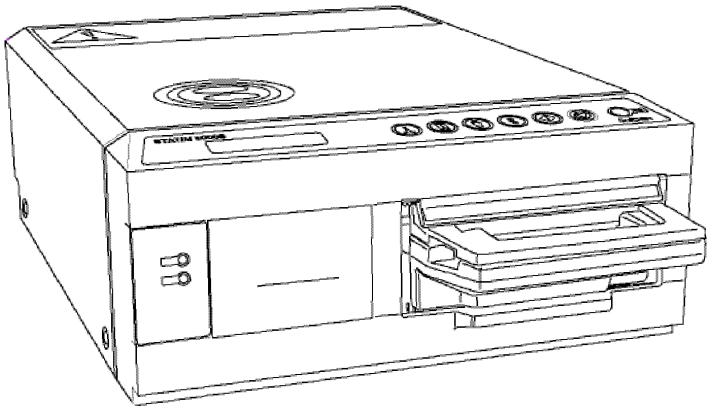
STAT*IM* 2000/S & 5000/S

Cassette Autoclave™



• **Rev. 7.0 Service Manual**



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Rev. 7.0 Service Guide 06-TSB-236
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1. Statim Non-S Calibration - Software revision 6.00 and higher

Instructions for the Calibration of Statim Autoclave thermocouples

Warning

- ➔ *Incorrect or inaccurate calibration may cause unsuccessful sterilization of instruments.*
- ➔ *Statim units contain electronic components which may be damaged or destroyed by electro-static discharge (ESD). Observe appropriate safeguards when calibrating.*
- ➔ *Always wear a static strap when working with or near printed wiring boards. In addition, use static foot-straps, grounding mats and grounded work surfaces when calibrating.*
- ➔ *Make sure that there is sufficient steam-process distilled water in the unit prior to starting calibration.*

The chamber and validation thermocouples must be calibrated to ensure the correct operation of the Statim Autoclave. ***Always recalibrate the system thermocouples following a software upgrade, when the steam generator is serviced, when the P.C. board is replaced, or when either of the thermocouples is replaced.***

The AIEx steam generator thermocouple doesn't require calibration, Validation Thermocouple however has to be calibrated and is done automatically by running a special calibration cycle.
New! The chamber thermocouple is calibrated by adjusting the Chamber Thermocouple Offset by using the Unwrapped and Wrapped keys while comparing a temperature on the display with a temperature measured by a reference thermometer.

To calibrate a Statim unit, follow these steps:

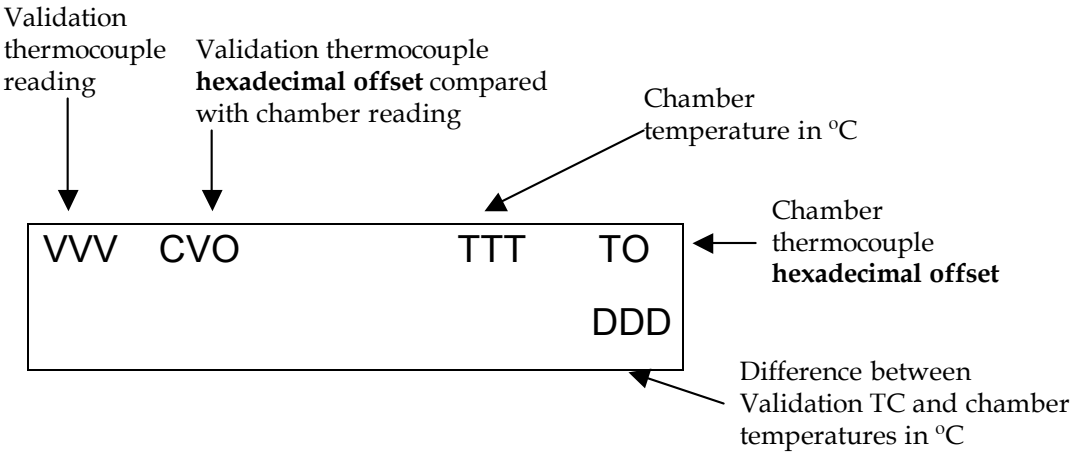
SETUP:

1. Turn the unit off and fill the reservoir with steam-distilled water.
2. ***New!*** There is no need to remove the cover from the Statim in order to perform the calibration.
3. Install a calibration cassette with the reference thermocouple inserted into the hole in the front of the chamber.
4. ***New!*** Power up unit while keeping Unwrapped and Wrapped button pressed to enter Statim **Service Mode**. This **Service Mode** is password protected, enter password to continue (default password is: Unwrapped, Wrapped, R&P and Stop keys pressed in this order).
   Keypad functions at this time:

Unwrapped Key:	Select next item in the menu.
Wrapped Key:	Select previous item in the menu.
Rubber and Plastic Key:	Enter current selection

   Toggle using keypad through the menu selection to reach Calibration option and press R&P key.

5. Confirm that the display appears similar to the example above.



The value in the lower right-hand corner (**DDD**) is the **difference** between the Chamber and Validation thermocouple readings. The value in the upper right corner is the Chamber **Temperature** (**TTT**). The value in the upper left-hand corner (**VVV**) is the **Validation** Thermocouple temperature. The 2 digits in the upper left-hand corner (**CVO**) represent the offset between **Chamber** thermocouple and **Validation** Thermocouple **Offset** in hexadecimal. The 2 digits in the upper right-hand corner (**TO**) are the Chamber **Temperature Offset** value in hexadecimal.

CHAMBER CALIBRATION:

6. Press the Unwrapped cycle button (first from the left) and after that press START button to activate a chamber thermocouple calibration cycle. The system will run a normal sterilization cycle. However, the LCD will continue to show the calibration display as shown above. (Note: No "∗" will appear in this mode as it does for the Validation Thermocouple calibration).
7. Wait for the chamber to reach the sterilization temperature of 134 °C.

New! Keypad functions at this time:

Unwrapped Key:	increment current selected offset
Wrapped Key:	decrement current selected offset
Stop Key:	end chamber thermocouple calibration

8. Observe the chamber temperature as displayed on the reference thermometer and on the upper right of the Statim LCD (TTT value). ***New!*** Adjust the TO value by using the Unwrapped and Wrapped keys until the displayed temperatures match to within +/- 0.2 °C. Please note that Chamber Temperature Offset TO flashes when it is allowed to be adjusted.
9. When the adjustment is complete, press the STOP button to end the chamber thermocouple calibration cycle.
10. Move to the Validation Thermocouple calibration procedure.

Validation Thermocouple Calibration:

11. ***New!*** Turn the machine off and back on, while keeping Unwrapped and Wrapped button pressed to go back to **Service Mode**. Enter password to continue. Toggle using keypad through the menu selection to reach Calibration option and press R&P key. The display should show the calibration screen.
12. Check that there is sufficient water in the water reservoir before proceeding.
13. Start a Validation Assy. self-calibration cycle. To do this, press and **hold** the UNWRAPPED button and in the same time press START button. The character "*" will appear immediately to the right of the Validation thermocouple hexadecimal offset on the display to indicate that a Validation Assy. calibration cycle is running. This calibration will take approximately 6 minutes.
14. Allow the Validation Assy. self-calibration to complete. The temperature within the chamber will rise to the sterilization temperature. Wait until sterilization phase of the calibration cycle ends automatically. The offset value in the upper left-hand corner of the display (CVO) may have changed to a new offset value.
15. Press the STOP button to end the Validation TC self-calibration cycle.
16. Power off the Statim.

Calibration of the Statim autoclave thermocouples is now complete.

2. Statim S-Class Calibration - Software Revision 6.00 & Higher

Instructions for the Calibration of Statim S-Class Autoclave

Warning

- ➔ *Incorrect or inaccurate calibration may cause unsuccessful sterilization of instruments.*
- ➔ *Always recalibrate the thermocouples and pressure transducer after replacing a steam generator, probe bracket, pressure transducer, controller board, pressure interface board, or microprocessor / EEPROM. In addition, after the thermocouple is bent or reconnected to the controller board, recalibration is recommended.*
- ➔ *S-Class units contain electronic components which may be damaged or destroyed by electro-static discharge (ESD). Observe appropriate safeguards when calibrating.*
- ➔ *Always wear a static strap when working with or near printed wiring boards. In addition, use static footstraps, grounding mats and grounded work surfaces when calibrating.*
- ➔ *Make sure that there is sufficient steam-process distilled water in the unit prior to starting calibration.*

The AIEx steam generator thermocouple doesn't require calibration. The chamber thermocouple and pressure transducer however must be calibrated to ensure the correct operation of the unit.

New! The chamber thermocouple is calibrated by adjusting the Chamber Thermocouple Offset by using the UNWRAPPED and WRAPPED keys (see instructions below) while comparing a temperature on the display with a temperature measured by a reference thermometer.

The pressure transducer is calibrated by using the same UNWRAPPED and WRAPPED (see instructions below) to adjust the measured chamber pressure reading on the LCD to match the reference pressure meter attached to the cassette. The calibration is then verified by comparing the measured chamber pressure to the calculated chamber pressure and making a fine adjustment, if necessary.

To calibrate a Statim unit, follow these steps:

SETUP:

NOTE: Only the chamber thermocouple and pressure sensor need to be calibrated. No boiler calibration is required on units with software revision above R410.

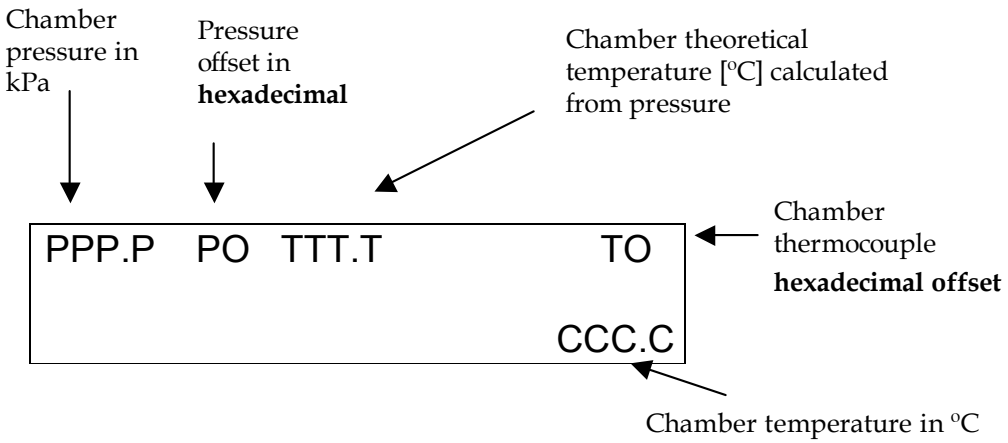
1. Turn the unit off and fill the reservoir with steam-distilled water.
2. ***New!*** There is no need to remove the cover from the Statim in order to perform the calibration.
3. Insert a calibration cassette and connect the external temperature and pressure probe.

4. ***New!*** Power up unit while keeping Unwrapped and Wrapped button pressed to enter Statim **Service Mode**. This **Service Mode** is password protected, enter password to continue (default password is: Unwrapped, Wrapped, R&P and Stop keys pressed in this order).

   Keypad functions at this time:

Unwrapped Key:	Select next item in the menu.
Wrapped Key:	Select previous item in the menu.
Rubber and Plastic Key:	Enter current selection

   Toggle using keypad through the menu selection to reach Calibration option and press R&P key.
5. Confirm that the display appears similar to the example above.



The value in the lower right-hand corner of the display (**CCC.C**) represents **Chamber** Temperature. The value in the upper left corner (**PPP.P**) is the Chamber **Pressure**. The following two digits in the upper left corner of the display (**PO**) represent the **Pressure** Sensor **Offset** value in hexadecimal followed by the theoretical chamber **Temperature** calculated from pressure (**TTT.T**). The two digits in the upper right corner of the display (**CO**) represent the **Chamber Offset** value in hexadecimal.

NOTE: ***For software revisions higher than 4.15 (R415), in order to account for the temperature drift of the pressure sensor, the field PO has two functions:***

1. ***When chamber pressure is below 115kPa the offset will have one value POA – Pressure Offset Atmospheric.***
2. ***When chamber pressure is higher than 115kPa the PO field will switch to indicate the POS – Pressure Offset Sterilization.***

CHAMBER CALIBRATION:

(Temperature and Pressure)

6. To start a chamber calibration cycle press and release the Unwrapped cycle button and then press START button. The system will run a normal sterilization cycle, but the LCD will continue to show the calibration display as shown in the example above.
7. By using the Unwrapped key (+) and Wrapped Key (-) adjust pressure offset (at atmospheric pressure) until the internal sensor pressure reading (as displayed in the PPP.P field) matches the pressure reading on the external pressure meter within ±0.5Kpa. The PO field will show the new pressure offset. For software revisions higher than 4.15 (R415) **PO** will represent **POA** (Pressure Offset Atmospheric). This has to be done within 30 seconds (see screen below):

PPP.P	PO	TTT.T	TO
Adjust Press!			CCC.C

8. After 30 seconds, the calibration cycle will continue by entering the heating up phase. Allow the chamber to reach the sterilization temperature. As pressure builds in the chamber check for leaks in the cassette, associated piping and fittings. A steam leak in the system will introduce errors in the measurement and will result in improper calibration and non-sterile instruments.

   New! Keypad functions at this time:

Unwrapped Key:	increment current selected offset
Wrapped Key:	decrement current selected offset
Rubber and Plastic Key:	select between PO and TO
Stop Key:	end chamber thermocouple calibration

9. During calibration the unit will run a normal cycle except the beginning of the holding phase (sterilization phase) when for ten consecutive times all the devices are turned off for approximately 10 seconds to facilitate the calibration process. During these periods chamber temperature could go down to 131°C. After these ten “calm” periods the unit will resume normal operation (see the TIP below for checking the calibration during normal operation).
10. During these “calm” periods observe the chamber temperature as displayed on the reference thermometer and on the lower right side of the Statim LCD (CCC.C value). ***New!*** Adjust the TO value by using the Unwrapped and Wrapped keys until the displayed temperatures match to within +/- 0.2 °C. Please note that Chamber Temperature Offset TO flashes when it is allowed to be adjusted. If PO flashes press R&P key to select TO field. Adjust TO when the display shows:

PPP.P	PO	TTT.T	TO
Adjust Temp!			CCC.C

11. For software revisions higher than 4.15 (R415) when chamber pressure is higher than 115kPa the PO field will switch to indicate the POS – Pressure Offset Sterilization. During the sterilization phase, after adjusting the temperature, press R&P key to select the PO field (PO field will be flashing) and using the keypad, adjust the pressure offset POS to match the external meter pressure indication within 1 kPa.

    NOTE: POS should not be more than 14 counts (7kPa) away in any direction from POA.

    TIP: To make sure the calibration has been done correctly, look at the external meter. When it shows 136.5°C you should hear the valve clicking (the valve opens at 136.5°C).

12. Verify that for the rest of the calibration cycle the temperature and pressure readings (internal and external) are the same.
13. When the adjustment is complete, press the STOP button to end the chamber calibration cycle. Calibration cycle will end automatically after 5 min of holding the temperature above 134°C. Press the Stop button again to reset the unit.

    NOTE: for software revisions higher than 4.15 (R415): If during recalibration POA is changed, the value of POS will be automatically reset to the new value of POA, therefore when chamber pressure is higher than 115kPa, POS has to be readjusted.

14. Power off the Statim.

Calibration of the Statim S-Class autoclave is now complete.

3. Statim Data Logger Quick Setup Guide

For units with Rev. 7 Printed Circuit Board Only

Note: Please do not connect Statim Data Logger. Follow instruction below first.

Step 1: Selection of the USB Flash/MSD Option.

a) Selection of the USB Flash/MSD Option

i. Power up unit while holding the Stop button pressed. The user menu is going to be displayed.

ii. By using Unwrapped and Wrapped keys scroll down to RS232. Press Rubber and Plastic key.

iii. The RS232 configuration menu is displayed. By using Unwrapped and Wrapped keys scroll down to the USB/Flash MSD option. Press Rubber and Plastic Key.

b) Selection of the Serial port Bitrate to 9600

i. By using Unwrapped and Wrapped keys scroll down to Serial Port Bitrate.

ii. The Serial Port Bitrate is going to be displayed. By using Unwrapped and Wrapped keys scroll down to 9600. Press Rubber and Plastic Key.

c) Selection of Printer user ° Char

i. By using Unwrapped and Wrapped keys scroll down to Printer user ° Char.

ii. Use Unwrapped Key to increment value by one, Wrapped Key to increment value by ten. Select value 32 [0x20]. Press Rubber and Plastic Key.

d) Save and Exit

i. By using Unwrapped and Wrapped keys scroll down to Save and Exit. Select by pressing Rubber and Plastic key.

ii. The following screen is going to be displayed:

HH:MM DD/MM/YYYY "MSD NOT DETECTED"/"INSERT FLASH/MSD"/"SELECT A CYCLE"

Step 2: Setup Date / Time.

a) Power up unit while holding the Stop button pressed. The user menu is going to be displayed.

b) By using Unwrapped and Wrapped keys scroll down to Time/Date Setup. Press Rubber and Plastic key.

c) Setup Time and Date by pressing Unwrapped, Wrapped, and Rubber and Plastic Keys. Press stop when done.

Step 3: Setup Unit ID.

a) Power up unit while holding the Stop button pressed. The user menu is going to be displayed.
b) By using Unwrapped and Wrapped keys scroll down to Unit ID Setup. Press Rubber and Plastic key.
c) Setup Unit ID by pressing Unwrapped, Wrapped, and Rubber and Plastic Keys. Press stop when done.

Step 4: Attach Statim USB adapter

a) Make sure that both Statim and Statim USB adapter are Off.
b) Connect Statim USB adapter to Statim unit by using the serial cable.
c) Power up the USB Data Logger
d) Power up Statim unit.
e) LCD Display will show:

HH:MM DD/MM/YYYY "MSD NOT DETECTED"/"INSERT FLASH/MSD"/"SELECT A CYCLE"

f) Insert USB memory
g) After a few seconds the LCD display changes to

HH:MM DD/MM/YYYY USB/FLASH DETECTED/SAFELY REMOVE MSD/SELECT A CYCLE

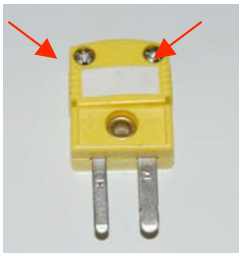
4. PCB Rev. 7.0 Assembly Instructions

All the connections remain the same as per previous PCB revisions with the exception of the thermocouple connection. In order to attach the thermocouple to the PCB, the thermocouple has to be attached to a TC connector as per following instructions:

TC connector & Thermocouple assembly

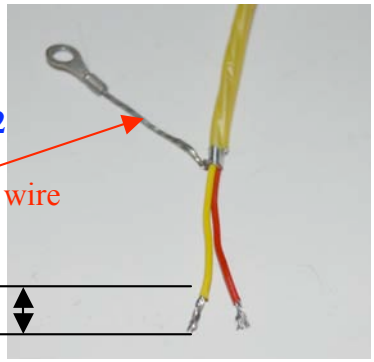
Screw 1 Screw 2

Step 1



Detach wire cover with Screws 1 and 2.

Step 2



Cut Ground wire.

Trim wires at 0.2 inches (5mm).

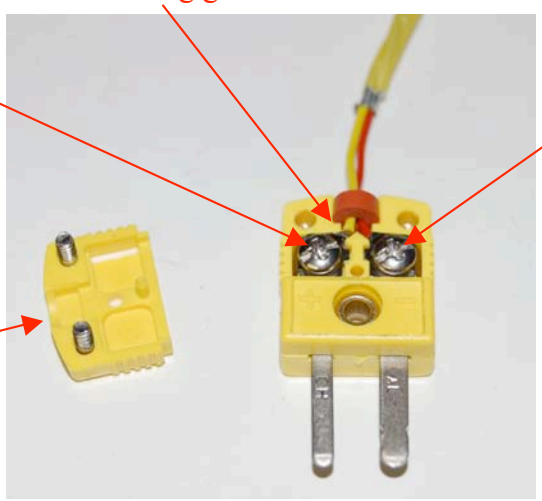
Step 3

Insert wires through the TC connector's rubber o-ring.

Rubber o-ring groove

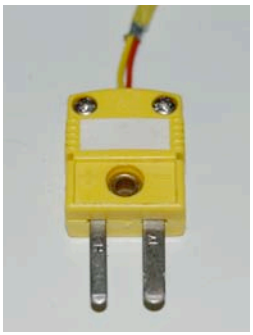
Screw 3 Screw 4

Step 4



Attach Yellow wire at the "+" sign of the TC connector and Red wire at the "-" sign of the TC connector using Screws 3 and 4. Position the rubber o-ring into its groove.

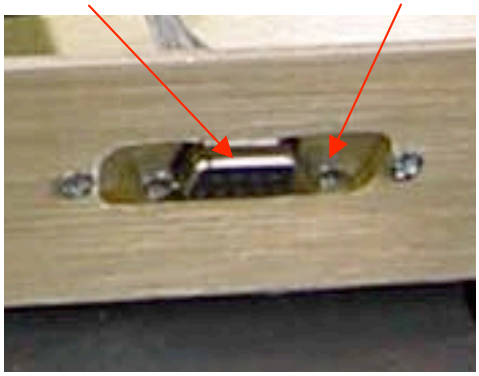
Step 5



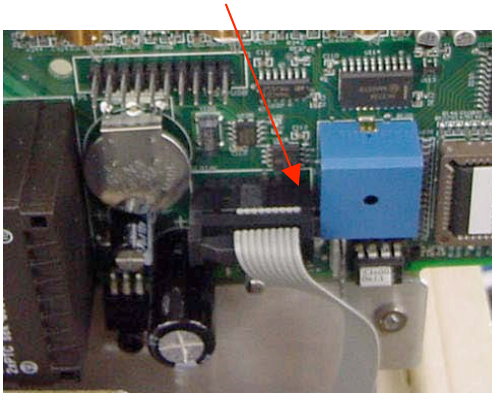
Reattach wire cover.

If serial cable is required (external printer cable replacement), attach adapter bracket, DB25 to DB9, to the printer connector opening on chassis using 2x screws. Attach DB9 connector from the serial cable to the adapter bracket and the 14-pin connector to Rev 7 PCB at connector J107.

DB9 connector DB25 to DB9 adapter



Pin 1



5.PCB 7 Replacement Kits ST5000/S

1.	01-109370S	PCB SEVEN 100V/110V ST5000 NA, Japan • *PCB Seven + Software*
2.	01-109746S	PCB 7 Repl. Kit ST5000 110V, NA, P • *PCB Seven + Software + Printer + Serial Cable* • *Instructions*
3.	01-109747S	Alex Boiler/PCB7 ST5000 NA 110V, P. • *PCB Seven + Software + Printer + Serial Cable* • *Alex Kit* • *Instructions*
4.	01-109816S	PCB 7 Repl.Kit ST5000 110V NA No P. • *PCB Seven + Software + Serial Cable* • *Instructions*
5.	01-109820S	Alex/PCB7 ST5000 NA 110V, No P. • *PCB Seven + Software + Serial Cable* • *Alex Kit* • *Instructions*
6.	01-109395S	PCB SEVEN 110V, ST5000 US, C • *PCB* Seven + Software
7.	01-109823S	PCB 7 Repl. Kit ST5000 110V, US, P. • *PCB Seven + Software + Printer + Serial Cable* • *Instructions*
8.	01-109824S	Alex Boiler/PCB7 ST5000 US 110V, P. • *PCB Seven + Software + Printer + Serial Cable* • *Alex Kit* • *Instructions*
9.	01-109826S	PCB 7 Repl.Kit ST5000 110V US No P. • *PCB Seven + Software + Serial Cable* • *Instructions*
10.	01-109827S	Alex/PCB7 ST5000 US 110V, No Print. • *PCB Seven + Software + Serial Cable* • *Alex Kit* • *Instructions*
11.	01-109829S	Alex/PCB7 ST5000 100V, No Print. • *PCB Seven + Software + Serial Cable* • *Alex Kit* • *Instructions*
12.	01-109830S	Alex Boiler/PCB7 ST5000 100V, P. • *PCB Seven + Software + Printer + Serial Cable* • *Alex Kit* • *Instructions*
13.	01-109396S	PCB SEVEN ST5000 230V, C • *PCB Seven + Software*
14.	01-109839S	PCB 7 Repl. Kit ST5000 230V, P. • *PCB Seven + Software + Printer + Serial Cable* • *Instructions*
15.	01-109840S	Alex Boiler/PCB7 ST5000 230V, P. • *PCB Seven + Software + Printer + Serial Cable* • *Alex Kit* • *Instructions*

5.PCB 7 Replacement Kits ST5000/S

16.	01-109842S	PCB 7 Repl. Kit ST5000 230V, No Pr. • *PCB Seven + Software + Serial Cable* • *Instructions*
17.	01-109843S	Alex Boiler/PCB7 ST5000 230V, No Pr. • *PCB Seven + Software + Serial Cable* • *Alex Kit* • *Instructions*
18.	01-109368S	PCB SEVEN 220/240V ST5000S, C • *PCB* Seven + Software
19.	01-109846S	PCB 7 Repl. Kit ST5000S, Pr. • *PCB Seven + Software + Printer + Serial Cable* • *Instructions*
20.	01-109847S	Alex Boiler/PCB7 ST5000S, Pr. • *PCB Seven + Software + Printer + Serial Cable* • *Alex Kit* • *Instructions*
21.	01-109849S	PCB 7 Repl. Kit ST5000S, No Pr. • *PCB Seven + Software + Serial Cable* • *Instructions*
22.	01-109850S	Alex Boiler/PCB7 ST5000S, No Pr. • *PCB Seven + Software + Serial Cable* • *Alex Kit* • *Instructions*
23.	01-109369S	PCB SEVEN Czech 230V ST5000S, C • *PCB* Seven + Software
24.	01-109851S	PCB 7 Repl. Kit ST5000SCzech, Pr. • *PCB Seven + Software + Printer + Serial Cable* • *Instructions*
25.	01-109852S	PCB 7 Repl. Kit ST5000SCzech, NoPr. • *PCB Seven + Software + Serial Cable* • *Instructions*
26.	01-109398S	PCB SEVEN 230V ST5000S 60PSI, C • *PCB* Seven + Software
27.	01-109855S	PCB 7 Repl. Kit ST5000S 60PSI, Pr. • *PCB Seven + Software + Printer + Serial Cable* • *Instructions*
28.	01-109856S	Alex Boiler/PCB7 ST5000S 60PSI, Pr. • *PCB Seven + Software + Printer* • *Alex Kit* • *Instructions*
29.	01-109858S	PCB 7 Repl. Kit ST5000S 60PSI No P. • *PCB Seven + Software* • *Instructions*
30.	01-109859S	Alex/PCB7 ST5000S, 60PSI No Pr. • *PCB Seven + Software + Serial Cable* • *Alex Kit* • *Instructions*

6. PCB 7 Replacement Kits ST2000/S

1.	01-109365S	PCB SEVEN Alex 110V 2000 B • *PCB Seven + Software*
2.	01-109690S	PCB 7 Repl. Kit, ST2000 110V, B • *PCB Seven + Software + Serial Cable* • *Instructions*
3.	01-109716S	Alex Boiler/PCB7 Kit ST2000 110V, B • *PCB Seven + Software + Serial Cable* • *Alex Kit* • *Instructions*
4.	01-109722S	Alex Boiler/PCB7 Kit ST2000 100V, B • *PCB Seven + Software + Serial Cable* • *Alex Kit* • *Instructions*
5.	01-109366S	PCB SEVEN, 230V, ST2000, B • *PCB Seven + Software*
6.	01-109692S	PCB 7 Repl. Kit, ST2000 230V, B • *PCB Seven + Software + Serial Cable* • *Instructions*
7.	01-109717S	Alex Boiler/PCB7 Kit ST2000 230V, B • *PCB Seven + Software + Serial Cable* • *Alex Kit* • *Instructions*
8.	01-109363S	PCB SEVEN 220/240V ST2000S Alex,B • *PCB Seven + Software*
9.	01-109642S	PCB 7 Repl. Kit, ST2000S 230V, B • *PCB Seven + Software + Serial Cable* • *Instructions*
10.	01-109718S	Alex Boiler/PCB7 Kit ST2000S 230V,B • *PCB Seven + Software + Serial Cable* • *Alex Kit* • *Instructions*
11.	01-109397S	PCB SEVEN 230V ST2000S Alex 60PSI • *PCB Seven + Software*
12.	01-109696S	PCB 7 Repl. Kit ST2000S 230V, 60 PSI • *PCB Seven + Software + Serial Cable* • *Instructions*
13.	01-109734S	Alex Boiler/PCB7 ST2000S 60PSI, B • *PCB Seven + Software + Serial Cable* • *Alex Kit* • *Instructions*
14.	01-109364S	PCB SEVEN Czech 230V ST2000S Alex, B • *PCB Seven + Software*
15.	01-109640S	PCB 7 Repl. Kit, ST2000S Czech, B • *PCB Seven + Software + Serial Cable* • *Instructions*
16.	01-109736S	Alex Boiler/PCB7 ST2000S Czech, B • *PCB Seven + Software + Serial Cable* • *Alex Kit* • *Instructions*

7. Statim Autoclave Conductivity Circuit Calibration Instructions

Statim Autoclave equipped with PCB rev 7.x requires Conductivity Circuit Calibration

1. Disconnect conductivity sensors wires
2. Using a wire, make a short on the FLOAT pins (J4-5 and J4-6)
3. Enter Service Mode (Power up unit while holding Unwrapped and Wrapped button pressed.)
4. Use Unwrapped Key to select next item in the menu or Wrapped Key to select previous item in the menu until Conductivity Setup is displayed.
5. Press Rubber and Plastic Key to enter Conductivity Setup selection.

   Display:

CND=xx.xuS/NNN		
L=LL.L	H=HH.H	G=G.GG

Where

xx.x	water conductivity in μS
NNN	conductivity measurement in ADC (Analog to Digital) counts (0…255)
LL.L	Lower value threshold in μS (No water threshold), default 0.3μS Values lower than this triggers “No Water, Refill reservoir” error.
HH.H	High value threshold (Bad water threshold), default 10μS. Values larger than this triggers “Bad Water Quality” error.
G.GG	Water conductivity circuit gain. Default 1.00

Note: Distilled water readings should be between Low and High thresholds.

6. Check/adjust Low and High threshold values to the default ones.
7. By pressing the Rubber and Plastic Key the selection moves between LO, HI and G
8. Select “G”, Water conductivity circuit gain (flashing value on the display), by pressing Rubber and Plastic Key
9. Adjust G.GG value so that the conductivity in ADC counts (NNN) shows 186 ±1 count.
10. Press Stop key to exit Water conductivity mode and save *displayed* thresholds “HH.H”, “LL.L” and “G.GG” and enter normal mode of operation, “Select cycle” screen.

Note: Keypad functions in Conductivity Setup screen:

Unwrapped Key:	increment current field (the flashing value on the display)
Wrapped Key:	decrement current field (the flashing value on the display)
Rubber and Plastics:	move to next field
Stop key:	*exit*

8. Statim Rev. 7 PCB User and Service Menus

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1. User setup menu

Note: To enter User Setup Menu power up Statim while Stop key is pressed

To initially setup your Statim

```
>Time/Date Setup
Language Setup
Unit ID Setup
Water Quality
Last Printout
RS232
End Of Line CR/LF
Serial Port Bitrate
Printer user ß char
Save and Exit
Exit
```

Keypad

Unwrapped	Select next item in the menu
Wrapped	Select previous item in the menu
Rubber and Plastics	Enter the indicated sub menu selection
Stop	Exit menu to normal mode of operation

1.1 Time/Date Setup Mode

Set the proper time and date

```
18:00    20/09/2005
HH:MM    DD/MM/YYYY
```

Keypad

Unwrapped	Increase current field
Wrapped	Decrease current field
Rubber and Plastics	Select next field
Stop	Save and exit to normal mode of operation

1.2 Language Setup

Display information in your desired language

Display

N.A ENGLISH

Available Languages

N.A ENGLISH	JAPANESE
U.K.ENGLISH	SVENSKA
FRANCAIS	POLSKI
DEUTSCH	MAGYAR
ESPANOL	CESKY
ITALIANO	NORSK
DANSK	ISLENSKA
PORTUGUES	SLOVENCINA
NEDERLANDS	EESTI
	Japanese (Sterimaster)

Keypad

Unwrapped	Select next language
Wrapped	Select previous language
Rubber and Plastics	If Repeater mode is on, this key will scroll through all the available display messages of the chosen language.
Stop	Save and exit to normal mode of operation

1.3 Unit ID Setup

Associate unit with an ID number

Unit# 000

Keypad

Unwrapped	Decrease current field
Wrapped	Increase current field
Rubber and Plastics	Select next digit
Stop	Save and exit to normal mode of operation

1.4 Water Quality

Display detected water quality

Water Quality CD=xx.xuS/NNN/y.yppm

Screen Representation

xx.x	Water conductivity in uS (micro-Siemens)
NNN	Water conductivity in ADC (Analog to Digital converter) counts (0…255)
y.y	Water quality in ppm (parts per million)

Keypad

Rubber and Plastics	Return to main menu
Stop	Exit to normal mode of operation

1.5 Last Printout

To reprint the last cycle

Keypad

Stop	Print the previous cycle data and exit to normal mode of operation

1.6 RS232

Select which serial device to attach

>RS232 USB FLASH/MSD
Debug Mode
N/A
Serial Printer
XML

Keypad

Unwrapped	Select next option. Second line shows the new value
Wrapped	Select previous option. Second line shows the new value
Rubber and Plastics	Select and return to main menu
Stop	Exit, without saving, to normal mode of operation

1.7 End of Line CR/LF

Configure the printout layout

>End Of Line CR/LF CR/LF
-
CR

This only needs to be set if a serial printer is attached to the serial port.

Available options

-	No line terminator is sent after each line. To be used with printers that accept only 20 characters per line and automatically advance to next line. **Should be used with the STATprinter.**
CR	A <CR> is sent at the end of the line. To be used with printers that advance to beginning of next line when a CR is received.
CR/LF	A <CR><LF> is sent at the end of the line. To be used with printers that translate advance to beginning of next line only when LF is received.

Keypad

Unwrapped	Select next option. Second line shows the new value
Wrapped	Select previous option. Second line shows the new value
Rubber and Plastics	Select and return to main menu
Stop	Exit, without saving, to normal mode of operation

SciCan Suggested External Printers	**End Of Line CR/LF**	**Serial Port Bit Rate**	**Printer user ° char**
Epson TM-U220D (C31C515603)	CR/LF	9600	248 [0xF8]
Citizen IDP-3110-40 RF 120B	CR	9600	N/A
Star Micro SP212FD42-120	CR	9600	210 [0xd2]
Star Micro SP216FD41-120	CR/LF	9600	210 [0xd2]
Star Micro SP512MD42-R	CR/LF	9600	210 [0xd2]

1.8 Serial Port Bit Rate

Choose bit rate for device connected to the serial port

>Serial Port Bitrate 9600
19200
57600
115200
300
1200
2400
4800

If USB FLASH/MSD is selected as the RS232 device, a Serial Port Bit Rate selection of 9600 will be required for the Data Logger to be operational.

Keypad

Unwrapped	Select next option. Second line shows the new value
Wrapped	Select previous option. Second line shows the new value
Rubber and Plastics	Select and return to main menu
Stop	Exit, without saving, to normal mode of operation

1.9 Printer user ° char

Setting to print a ° sign

Printer user ° char dd [0xhh]

Screen Representation

dd	Decimal value for selected char (default 32)
hh	Hex value for the selected char (default 20)

Keypad

Unwrapped	Increase value by one
Wrapped	Increase value by ten
Rubber and Plastics	Select and return to main menu
Stop	Exit, without saving, to normal mode of operation

1.10 Save and Exit

Save settings and return to normal mode

Upon selection, current settings are saved and unit restarts in normal mode of operation

1.11 Exit

Exit menu without saving settings.

Upon selection, current settings are discarded (not saved) and unit restarts in normal mode of operation.

2. Service Menu

Note: To enter Service Menu power up Statim while holding Unwrapped and Wrapped keys pressed. After that enter password to access Service menu. Default password is Unwrapped, Wrapped, R&P and Stop keys in this order. The service technician can change this password. In case the changed password is lost a backdoor password can be used: Unwrapped, Wrapped, Unwrapped, Wrapped in this order.

To setup the advanced options of Statim

>Calibration Time/Date Setup	
Language Setup	
Unit ID Setup	
Set cycle counter	
Lock cycles	For S class units only
Conductivity Setup	
Water.Cnd Tmp. Comp	
Last Printout	
Stored CF Printouts	
Clear CF Printouts	
Display last CF#	
Devices Test On/Off	
Temperature Offset	
Press. Atm. Offset	For S class units only
Press. Ster. Offset	For S class units only
Press. Sensor Type	For S class units only
Validation Offset	For non-S class units only
Voltage Calibration	
Voltage setup	
Repeater mode	
RS232	
End of Line CR/LF	
Serial Port Bitrate	
Printer user ß char	
Factory default	
Change Password	
Backup NVRAM	
Restore NVRAM	
Save and Exit	
Exit	
Production Cycle	

Keypad

Unwrapped	Select next item in the menu
Wrapped	Select previous item in the menu
Rubber and Plastic	Enter the indicated sub menu selection
Stop	Exit and return to normal mode of operation

2.1. Calibration

Calibrate thermocouple offsets

2.1.1. Non S units

Chamber Calibration Screen

VVV.V	VO	CCC.C	CO
			VC

Chamber Calibration Sterilization phase

VVV.V	VO	CCC.C	CO
ADJUST TEMP!			VC

"ADJUST TEMP!" is displayed during moments when the Chamber Offset should be adjusted. Chamber Offset (CO) flashes when it can be adjusted.

Validation thermocouple validation

VVV.V	VO*	CCC.C	CO
			VC

Screen Representation

VVV.V	Validation thermocouple reading
VO	Validation thermocouple offset
CCC.C	Chamber thermocouple reading
CO	Chamber thermocouple offset
VC	Difference between Validation thermocouple reading and Chamber thermocouple reading. After calibration, this value should be close to 0.

<u>Keypad functions when calibration cycle is not started:</u>

Unwrapped

- To start the Chamber thermocouple Calibration cycle, first press and release the Unwrapped key followed by the pressing of the Start key.
- To start the Validation thermocouple Calibration cycle, select the Unwrapped key together with the Start key.
- 900/Sterimaster type units – Start the Validation thermocouple Calibration cycle.

Wrapped

- Send the last printout is to the printer. The printer must be connected and selected for this feature to work.
- 900 type units – Start the Chamber thermocouple Calibration cycle.

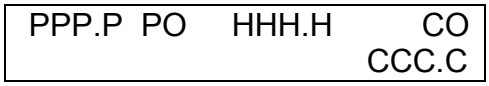
Rubber and Plastics	Start the Burn-in cycle
Stop	Exit to normal mode of operation

Keypad functions when calibration cycle is running:

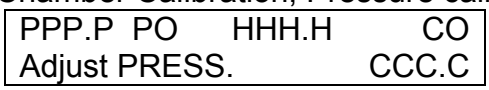
Unwrapped	Increment selected offset
Wrapped	Decrement selected offset
Stop	Interrupt calibration cycle

2.1.2. S units

Chamber Calibration Screen

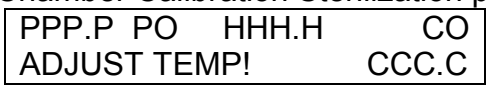


Chamber Calibration, Pressure calibration phase



"Adjust PRESS!" is displayed during moments when the Pressure Offset at Atmospheric (POA) should be adjusted. PO flashes when it can be adjusted. When the phase ends, "Adjust PRESS!" disappears from the screen. CO will then start flashing, showing that the Chamber Offset (CO) can be adjusted.

Chamber Calibration Sterilization phase



"ADJUST TEMP!" is displayed during moments when the Chamber Offset (CO) should be adjusted. CO flashes when it can be adjusted.

While in the sterilization phase of the calibration cycle, the Pressure Offset at Sterilization (POS) can be adjusted. First, select PO using the keypad. Then increment or decrement PO to match the external pressure reference. PO will flash when it is selected and can be adjusted.

PPP.P	Pressure reading
PO	Pressure offset. It reads POA when the pressure is lower than 115kPa and POS when the pressure reading is higher or equal to 115kPa.
HHH.H	Calculated chamber pressure
CO	Chamber offset
CCC.C	Chamber temperature reading

Keypad functions when calibration cycle is not started:

Unwrapped

	To start the Chamber thermocouple Calibration cycle, first press and release the Unwrapped key followed by pressing the Start key.
Wrapped	Sends the last printout to the printer. The printer must be connected and selected for this feature to work.
Rubber and Plastics	Start the Burn-in cycle
Stop	Exit to normal mode of operation

Keypad functions when calibration cycle is running:

Unwrapped	Increment current selected offset.
Wrapped	Decrement current selected offset
Rubber and Plastics	Select other offset
Stop	Interrupt calibration cycle

2.2. Set cycle counter

Adjust the recorded number of cycles ran

Cycle # 000000

Keypad

Unwrapped	Decrement current digit
Wrapped	Increment current digit
Rubber and Plastics	Move to next digit
Stop	Save and exit to normal mode of operation

2.3. Lock cycles

Expands or contracts the selection of cycle parameters for each cycle button.

Keypad

Unwrapped	Toggle to Locked/Unlocked mode
Stop	Save and exit to normal mode of operation

Display after toggling to Unlocked mode

Cycles UNLOCKED Available cycles

Display after toggling to Locked mode

Cycles LOCKED Selected cycles

In the “Cycles LOCKED” mode, each cycle button will represent one set of cycle parameters. In the “Cycles UNLOCKED” mode, each cycle button can represent multiple sets of cycle parameters. After toggling to each mode, the corresponding

cycles and cycle parameters are displayed one by one on the LCD display. The available sets of cycle parameters are listed in the chart below.

Available Cycles	Unlocked mode	Locked mode	Keypad Button
SOLID UNWRAPPED (N) 134°C / 3.5 min	✓	✓	Unwrapped
HOLLOW UNWRAPPED (S) 134°C / 3.5 min	✓		
HOLLOW UNWRAPPED (S) 134°C / 18 min	✓		
HOLLOW WRAPPED (S) 134°C / 3.5 min	✓	✓	Wrapped
HOLLOW WRAPPED (S) 134°C / 18 min	✓		
RUBBER / PLASTICS (S) 121°C / 15 min	✓	✓	Rubber & Plastics
RUBBER / PLASTICS (S) 121°C / 30 min	✓		
AIR DRYING ONLY 60 MIN. MAXIMUM	✓	✓	Air Drying

2.4. Conductivity Setup

Adjust the water conductivity thresholds

```
CD=xx.xuS/NNN/y.yppm
L=LL.L H=HH.H G=G.GG
```

Screen Representation

xx.x	Water conductivity in uS (micro-Siemens)
NNN	Water conductivity in ADC (Analog to Digital converter) counts (0…255)
y.y	Water quality in ppm (parts per million)
LL.L	Lower value threshold / No water threshold. Values lower than this triggers “No Water” error (default 0.5uS)
HH.H	High value threshold / Water quality threshold. Values larger than this triggers “No Water” error (default 10.0uS)
G.GG	Water conductivity circuit gain (default 1.00)

Note: Distilled water readings should be between Low and High thresholds.

The currently selected field is indicated by the flashing value on the display.

Keypad

Unwrapped	Increment current field
Wrapped	Decrement current field
Rubber and Plastics	Move to next field
Stop	Exit Conductivity setup and save ***displayed*** thresholds, "HH.H" and "LL.L". Enter normal mode of operation.

2.5. Water.Cnd Tmp. Comp

Enable or disable water conductivity temperature compensation

```
>Water.Cnd Tmp. Comp
On
Off
```

Keypad

Unwrapped	Select next option. Second line shows the new value
Wrapped	Select previous option. Second line shows the new value
Rubber and Plastics	Select and return to main menu
Stop	Exit, without saving, to normal mode of operation

2.6. Stored CF Printouts

Print saved Cycle Fault printouts

The unit restarts to normal mode of operation. The saved CF printouts are sent to the printer or data logger only when either one is attached and configured. The following types of errors are saved:

- CF's
- Water quality or Water level low errors
- Cycle interrupted due to errors (##)

Keypad

Stop	Exit to normal mode of operation

2.7. Clear CF Printouts

Reset Cycle Fault printout list

```
>Clear CF Printouts
No
YES
```

Keypad

Unwrapped	Select next option. Second line shows the new value
Wrapped	Select previous option. Second line shows the new value
Rubber and Plastics	Select and return to main menu
Stop	Exit, without saving, to normal mode of operation

2.8. Display last CF#

Show the last Cycle Fault that occurred

```
>Display last CF#
## (#######)
```

Screen Representation

##	Value of last recorded CF
(#######)	Cycle counter for last CF

Keypad

Rubber and Plastics	Return to main menu
Stop	Exit to normal mode of operation

2.9. Devices Test On/Off

Toggle the unit's devices on or off

```
>Devices Test On/Off
Pump Off
```

Valve Off
Compressor Off
Yellow LED Off
Extra 1L Off
Extra 2L Off
Drawer Relay Off

Keypad

Unwrapped	Select next option. Second line shows the new value
Wrapped	Select previous option. Second line shows the new value
Rubber and Plastics	Toggle On/Off selected device
Stop	Return to main menu

2.10. Temperature Offset

View the offset of the thermocouple

```
>Temperature Offset
##
```

Screen Representation

##	Offset Value

Keypad

Rubber and Plastics	Return to main menu
Stop	Exit to normal mode of operation

2.11. Press. Atm. Offset

View the offset of the pressure sensor for atmospheric conditions

```
>Press. Atm. Offset
##
```

Screen Representation

##	Offset Value

Keypad

Rubber and Plastics	Return to main menu
Stop	Exit to normal mode of operation

2.12. Press. Ster. Offset

View the offset of the pressure sensor for sterilization conditions

```
>Press. Ster. Offset
##
```

Screen Representation

##	Offset Value

Keypad

Rubber and Plastics	Return to main menu
Stop	Exit to normal mode of operation

2.13. Press. Sensor Type

Select the type of pressure sensor connected to the unit

```
>Press. Sensor Type
68PSI
```

N/A
60PSI

Keypad

Unwrapped	Select next option. Second line shows the new value
Wrapped	Select previous option. Second line shows the new value
Rubber and Plastics	Select and return to main menu
Stop	Exit, without saving, to normal mode of operation

2.14. Validation Offset

View the offset of the thermocouple

>Validation Offset ##

Screen Representation

##	Offset Value

Keypad

Rubber and Plastics	Return to main menu
Stop	Exit to normal mode of operation

2.15. Voltage Calibration

Adjust voltage offsets

Voltage Calibration V = VVV VCal. = CCC

Screen Representation

VVV	Voltage measured by unit
CCC	Voltage calibration offset. This should be adjusted so that the VVV value is the same as the line voltage measured by a voltmeter.

Keypad

Unwrapped	Increase current field
Wrapped	Decrease current field
Rubber and Plastics	Select and return to main menu
Stop	Exit, without saving, to normal mode of operation

2.16. Voltage setup

Select input voltage of unit

>Voltage setup 115V 230V

Keypad

Unwrapped	Select next option. Second line shows the new value
Wrapped	Select previous option. Second line shows the new value
Rubber and Plastics	Select and return to main menu
Stop	Exit, without saving, to normal mode of operation

2.17. Repeater mode

Enable or disable unit to run cycles continuously

>Repeater mode On

Off

Keypad

Unwrapped	Select next option. Second line shows the new value
Wrapped	Select previous option. Second line shows the new value
Rubber and Plastics	Select and return to main menu
Stop	Exit, without saving, to normal mode of operation

2.18. Factory default

Reset to factory default settings

>Factory default No

YES, RESET NVRAM !

This function resets the NVRAM to factory default settings. The chamber and voltage calibration offsets and conductivity settings will be reset. The cycle counter will not be reset.

Keypad

Unwrapped	Select next option. Second line shows the new value
Wrapped	Select previous option. Second line shows the new value
Rubber and Plastics	Select and return to main menu
Stop	Exit, without saving, to normal mode of operation

2.19. Change Password

Change the password required to access the service menu

The unit will query for a 4 key password.

Type New Password ****

The unit will require that the user re-enter the same 4 key password.

Retype New Password ****

The unit will confirm that the password has been changed or if changing the password failed, the unit will again query for a new 4 key password.

Password Changed

2.20. Backup NVRAM

Saves a copy of the unit's current settings

>Backup NVRAM
No
Yes

Keypad

Unwrapped	Select next option. Second line shows the new value
Wrapped	Select previous option. Second line shows the new value
Rubber and Plastics	Select and return to main menu
Stop	Exit, without saving, to normal mode of operation

2.21. Restore NVRAM

Restores the previously saved unit settings into the NVRAM

>Restore NVRAM
No
Yes

Keypad

Unwrapped	Select next option. Second line shows the new value
Wrapped	Select previous option. Second line shows the new value
Rubber and Plastics	Select and return to main menu
Stop	Exit, without saving, to normal mode of operation

9. Statim 2000 Trouble-shooting
Cycle Faults – Software Revision R1xx, R2xx, R4xx, R5xx and R6xx

Cycle Fault Number	Description of Fault	Probable Cause of Fault
Cycle Fault #1	The cassette temperature failed to reach 95ºC within a time-out period.	This fault may be caused by a large cassette leak in conjunction with an extremely large load or a blown thermal fuse caused by weak pump delivery and/or contaminated steam generator or a faulty steam generator triac. If the triac has failed, the thermal fuse may have also failed. A faulty steam generator (steam generator resistance failed open) could also cause this fault.
Cycle Fault #2 *Software Revisions R1xx or R2xx only*	The cassette temperature failed to increase from 95°C to 100°C within a time-out period.	This may be cause by a major steam leak from the cassette, incorrect chamber temperature calibration or an extremely large load.
Cycle Fault #3	The cassette has failed to pressurize and achieve a temperature of 110ºC within a time-out period.	This may be caused by a faulty cassette seal, a damaged cassette or a faulty solenoid valve (failed to close). Verify check valve and pressure relief valves for leaks. For PCB rev other than rev. 7.xx verify Vref to be 2.520V± 0.001V.
Cycle Fault #4	The cassette has failed to achieve sterilization conditions within a timeout period.	This may be caused by a faulty cassette seal, a damaged cassette, improperly installed copper tubing, a failed or faulty solenoid valve (failed to close) , or improper alignment of the probe bracket. Verify check valve and pressure relief valves for leaks. For PCB rev other than rev. 7.xx verify Vref to be 2.520V± 0.001V
Cycle Fault #5 *Software Revision R1xx only*	The software causes the pump to activate at predetermined times. If a request to pump water occurs outside of the predetermined time Cycle Fault #5 occurs.	This may be caused by a leaky cassette, a kink in the steam generator inlet tube, a leaking solenoid outlet valve, a weak pump and a very large load in the cassette.

9. Statim 2000 Trouble-shooting
Cycle Faults – Software Revision R1xx, R2xx, R4xx, R5xx and R6xx

Cycle Fault #6 *Software Revisions R2xx or R4xx*	The software has detected the filtered steam generator temperature 6°C greater than the chamber during the sterilizing phase of a cycle.	The most probable causes are an obstruction caused by seal misalignment or foreign material in the seal channel, a need for thermocouple or steam generator calibration or an old or contaminated steam generator.
Cycle Fault #6 *Software Revision R5xx and R6xx*	The software has detected the Validation thermocouple temperature to be 5°C greater than the chamber during the sterilizing phase of a cycle.	Check for kinked or pinched exhaust tubing and for visible steam leaks from the cassette seal, lid or tray. Check the solenoid and make sure the plunger is not sticking. Recalibrate validation thermocouple (former boiler calibration) or chamber thermocouple. Verify PCB (chamber temperature reading too low, for PCB rev other than rev 7.xx bad Vref, etc.).
Cycle Fault #7	During Sterilization phase of the cycle the cassette temperature has dropped below a threshold value.	This may be caused by a faulty solenoid valve (fails to close), a leaky cassette, a leaky pressure relief valve, a leaky check valve. Check for kinked or pinched exhaust tubing. Check for a clogged duct in the left rear of the cassette tray.
Cycle Fault #8 *Software Revisions R2xx or R4xx*	The software has detected the filtered steam generator temperature 6°C less than the chamber during the sterilizing phase of a cycle.	This may be caused by a faulty steam generator, a cassette thermocouple miscalibration, by a contaminated steam generator or a high output pump.
Cycle Fault #8 *Software Revision R5xx and R6xx*	The software has detected the Validation Thermocouple temperature to be 5°C less than the chamber temperature during the sterilizing phase of a cycle.	Check for a clogged duct in the left rear of the cassette tray. Check the solenoid for debris and make sure the plunger is not sticking. Recalibrate validation thermocouple (former boiler calibration). Check PCB (chamber temperature reading too high, for PCB rev other than rev 7.xx bad Vref, etc.) Check water pump (high output pump). Check water pump (weak pump).

9. Statim 2000 Trouble-shooting
Cycle Faults – Software Revision R1xx, R2xx, R4xx, R5xx and R6xx

Cycle Fault #9	Not used	
Cycle Fault #10	The cassette temperature has failed to drop to115°C during the Unwrapped or Wrapped Cycle OR the temperature has failed to drop to 110°C during the Rubber and Plastics Cycle in the purge conditioning stage.	Check for a clogged duct in the left rear of the cassette tray. Check exhaust tubing (kinked or tightly coiled). Check solenoid valve for improper connection, a failed solenoid valve (blown coil) or plunger sticking.
Cycle Fault #11	The cassette temperature has failed to drop to 102°C within a timeout period of the end of a cycle during venting.	Check for a clogged duct in the left rear of the cassette tray. Check exhaust tubing (kinked or tightly coiled). Check solenoid valve for improper connection, a failed solenoid valve (blown coil) or plunger sticking.
Cycle Fault #12	This indicates a problem with the temperature measuring system.	Possible causes are a faulty PCB, a disconnected, broken or faulty thermocouple lead.
Cycle Fault #13	Not used	
Cycle Fault #14 *Software Revisions R1xx or R2xx only*	The steam generator temperature is above 171°C during the Sterilization phase of a cycle.	This may be the result of a weak water pump, steam generator or cassette thermocouple miscalibration, or a defective water quality sensor (cycle running with insufficient water).
Cycle Fault #15	The cassette temperature raised above the high threshold during the Sterilization phase of a cycle or above 138.6°C during conditioning or pressurizing phase of the cycle	Probable causes are a blocked duct in the cassette, a pinched exhaust tube leading to the waste bottle, or a faulty solenoid valve.
Cycle Fault #16	The steam generator temperature went above a threshold value	This may be the result of a blocked steam generator inlet tube, a failed or weak water pump, a failed pump triac, failed steam generator triac, faulty seal installation or failed solenoid valve.
Cycle Fault #17-#18	Not used	

9. Statim 2000 Trouble-shooting
Cycle Faults – Software Revision R1xx, R2xx, R4xx, R5xx and R6xx

Cycle Fault #19	For software rev. R1xx, R2xx and R4xx the steam generator calibration is invalid. For software rev. R5xx and R6xx the validation thermocouple calibration is invalid. In both cases a new steam generator or validation thermocouple calibration is required.	This occurs when a new controller board or microprocessor has been installed. This may also happen when the unit has been subjected to a strong static discharge corrupting the memory. Calibrate the boiler / validation thermocouple
Cycle Fault #20 *Software Revisions R1xx or R2xx*	The pump has failed to pump water into the steam generator during a pre-vent pump time-out. The steam generator temperature was greater than 140°C for 3.6 seconds after the pump was activated to pump water to cool the steam generator.	This may be the result of a blocked steam generator inlet tube, a failed or weak water pump, a failed pump triac or steam generator triac, faulty seal installation or failed solenoid valve. Also may be the result of a defective water quality sensor (insufficient water in the reservoir)
Cycle Fault #21-#24	N/A	
Cycle Fault #25	The software has failed to detect a need to pump water within 90 seconds of the start of the cycle	The most probable cause is a blown thermal fuse due to weak pump delivery and/or a contaminated steam generator, or improperly connected steam generator leads (loose or unconnected). If the steam generator triac has failed, the thermal fuse may have also failed. Verify steam generator resistance (could be failed open)
Cycle Fault #26 *Software Revisions R1xx, R2xx or R4xx*	The sterilization phase has failed to start within 3 minutes of the cassette reaching the sterilization temperature. For software rev. R4xx CF26 is displayed when it occurred in three consecutive cycles (Cycle interrupted is displayed for the first two cycles). Cycle Fault 26 counter is reset whenever a successful cycle is completed.	This may be caused by improper boiler thermocouple calibration, by a contaminated steam generator, by a weak pump delivery or by a faulty solenoid valve. Also verify Vref to be 2.520V± 0.001V

9. Statim 2000 Trouble-shooting
Cycle Faults – Software Revision R1xx, R2xx, R4xx, R5xx and R6xx

Cycle Fault #26 *Software Revision R5xx and R6xx*	The sterilization phase has failed to start within 3 minutes of the cassette reaching the sterilization temperature. CF26 is displayed when it occurred in three consecutive cycles (Cycle interrupted is displayed for the first two cycles). Cycle Fault 26 counter is reset whenever a successful cycle is completed.	This may be caused by improper validation thermocouple calibration, by a weak pump delivery or by a faulty solenoid valve. For PCB other than rev 7.xx also verify Vref to be 2.520V± 0.001V.
Cycle Fault #27	The temperature of the steam generator failed to drop bellow a set-point temperature (150°C or 165°C) in a timeout period	Several conditions may cause this: weak pump delivery and/or out of water during a cycle, restriction to the pump inlet tube or a defective water quality sensor (sensor does not detect insufficient water in the water reservoir) or a contaminated steam generator.
Cycle Fault #72 *Software Revision R5xx only*	There is a communication error between the microprocessor and the Temperature Adapter Board (TAB).	Check the connection between the square microprocessor and the Printed Circuit Board (PCB). If an adapter board is used check the connection between the adapter board and the PCB. Look for bent or broken pins. Verify that Temperature Adapter PCB(TAB) is properly inserted and secured on the main Statim PCB.
Cycle Fault #90 *Software Revisions R6xx only*	Corrupted or not initialized chamber calibration value	This occurs when a new controller board or microprocessor has been installed. This may also happen when the unit has been subjected to a strong static discharge corrupting the memory. Calibrate chamber thermocouple.
Cycle Fault #91	N/A – S-class only.	

9. Statim 2000 Trouble-shooting
Cycle Faults – Software Revision R1xx, R2xx, R4xx, R5xx and R6xx

Cycle Fault #98 *Software Revisions R4xx and up (includes R5xx and R6xx)*	Microcontroller fails to communicate with ADC (Analog to Digital Converter)	Hardware failure. MCU not inserted properly in the socket, extract MCU, and verify pins not to be shorted. Damaged ADC converter, replace PCB. If a PCB adapter is used, verify that PCB adapter is properly secured in the socket and that there are no bent pins. If PCB rev 2.x is in place make sure that C40 is removed.
"NO CONFIGURATION EEPROM"	Lack of communication between microcontroller and EEPROM	Hardware failure. MCU not inserted properly in the socket, extract MCU, and verify pins not to be shorted. Damaged or wrong inserted or missing EEPROM, replace software kit. Damaged controller PCB. If a PCB Adapter is used, verify that PCB adapter is properly secured in the socket and that there are no bent pins

9. Statim 2000 Trouble-shooting
Printer Messages

Cycle Fault Number	Description of Fault	Probable Cause of Fault
Message "PRINTER FAULT" (If optional printer is installed)	Printer is not printing.	This may be caused by a paper jam, a failed printer or failed printer electronics. Check that power is ON, check connector attachments.
"CYCLE ABORTED"	This error message is displayed on the printout only, followed by the message "NOT STERILE", as a result of the operator pressing the STOP button to stop the cycle or as a result of any other abnormal cycle termination, including CYCLE FAULT errors.	
"STOP BUTTON PRESSED"	The operator pressed the STOP button to stop the cycle. The LCD shows the message "NOT STERILE" as a result.	
"CYCLE INTERRUPTED"	This error is displayed on power-up following a power failure occurs during a cycle or whenever the power is turned OFF after an error occurred without pressing the STOP button to reset. (Rev. R200 level code) This message is displayed when the sterilization phase has failed to start within three minutes of the cassette reaching the sterilization temperature. If it occurs in three consecutive cycles Cycle Fault #26 is displayed. (Software Rev. R4xx, R5xx and R6xx)	
"PRESS STOP TO RESET"	This message is displayed for all error faults. The user MUST press the STOP button on the keypad to reset the unit; otherwise the user will be unable to initiate another cycle.	

9. Statim 2000 Trouble-shooting (Diagnosing Conductivity Sensor Problems for PCB Rev 2.x, 5.x and 6.x only)

STAT*IM* / STAT*IM 1000* / *2000* UNITS CONTAIN ELECTRONIC COMPONENTS WHICH MAY BE DAMAGED OR DESTROYED BY ELECTROSTATIC DISCHARGE (ESD). IF THE RESERVOIR HAS BEEN DRAINED PRIOR TO TRANSPORT OR IF A NEW RESERVOIR IS BEING INSTALLED INTO THE UNIT, DISCHARGE THE PLASTIC RESERVOIR PRIOR TO DIAGNOSING CONDUCTIVITY SENSOR PROBLEMS OR INSTALLATION.

WHEN INSTALLING A NEW RESERVOIR, ALWAYS SHORT THE SENSOR LEADS TO THE CHASSIS WHILE FILLING THERESERVOIR FOR THE FIRST TIME.

Before starting diagnostic procedures check that:

1. The reservoir is free of any debris and the conductivity sensor is clean.
2. The reservoir is filled with good quality steam distilled process water so that the conductivity sensor is completely submerged. If in doubt about water quality, drain the reservoir and refill with steam-process distilled water containing less than 5 ppm total dissolved solids or having conductivity less than 10 µS/cm.
3. The leads of the conductivity sensor are securely connected to Controller Board – check latest TSB for connections.
4. Nothing is connected to Controller Board terminal positions labeled FLOAT J4-5 and J4-6.
5. The Controller Board is clean and dry (both sides). Pay particular attention to terminal block J4 and components on the upper right hand portion of the board.
6. For rev 2.x, 5.x and 6.x Controller Boards, measure the negative voltage across test connector header positions P1-1 and P1-3. If the voltage reading is not within -8.4V to -9.7V, replace the Controller Board.

To check the Conductivity sensor, follow these steps:

1. Power the unit OFF and disconnect the sensor leads from Controller Board connector positions J4-3 and J4-4.
2. Power the unit ON and start an Unwrapped cycle.
3. If a "REFILL RESERVOIR, EMPTY WASTE BOTTLE" message appears on the LCD, proceed to step 4. If the cycle starts when the sensor leads are disconnected, replace the Controller Board.
4. Short Controller Board connector positions J4-3 and J4-4 together and start a cycle. If the unit displays a "WATER QUALITY NOT ACCEPTABLE" message, proceed to step 5. If not, replace the Controller Board.
5. Remove the short from J4-3 and J4-4 and short Controller Board connector positions J4-5 and J4-6 together. If the unit displays a "SELECT A CYCLE" message, it is unlikely that the Controller Board is damaged.
6. If problems persist, leave the unit powered ON to allow internal components to warm up for a period of time (some failures are temperature dependent). Then start any sterilization cycle and repeat steps 1 through 6.
7. To test the conductivity sensor, short the sensor posts in the reservoir using a long handle screwdriver. The measured resistance across the unconnected sensor leads should be less than 1.0 ohm. If the reading is other than that the sensor is likely damaged.

Replace the reservoir.

9. Statim 2000 Trouble-shooting
Trouble-shooting, Original Statim Error Codes Unit Displays Select A Program

There are different types of Controller Boards and software revisions which may be encountered while servicing STAT*IM* / STAT*IM 1000* / *2000* units.
Before using the Original Statim Error Codes verify that the Statim displays Select A Program when turned on.

Error Message Number	Description of Error Message	Probable Cause of Error Message
Check Cassette #1	The cassette temperature failed to reach 95°C in 3 minutes.	This error message occurs only during warm up. The most probable causes are: 1. Steam generator does not heat up. No power to steam generator. Blown thermal fuse. 2. Check for a large cassette leak or a large load.
Check Cassette #2	The cassette temperature failed to increase from 95°C to 100°C within 1 minute 20 seconds.	Most probable causes are a faulty cassette seal, miscalibration, a damaged cassette, improperly adjusted or failed microswitch allowing unit to function when cassette is not fully inserted. Occasionally, a low pressure weather system in higher altitude sites will alter the boiling temperature significantly and trigger this fault. Verify Vref to be 4.0V.
Check Cassette #3	The cassette has failed to pressurize and achieve a temperature of 110°C within 70 seconds of pressurization.	This may be caused by a faulty or worn cassette seal, a faulty or dirty solenoid valve, a damaged cassette or a faulty exhaust tube, leaky check valve or pressure relief valve.
Check Cassette #4	The cassette has failed to achieve sterilization conditions within 10 minutes of the chamber first reaching 102°C.	Several conditions may cause this: a damaged or worn cassette seal, a faulty solenoid valve, an improperly installed copper tubing, cassette thermocouple misalignment or damage, a faulty steam generator pressure relief valve or a faulty check valve on.
Check Cassette	The software causes the pump to activate while	This indicates a substantial steam leak from the cassette,

9. Statim 2000 Trouble-shooting
Trouble-shooting, Original Statim Error Codes <u>Unit Displays Select A Program</u>

#5	between 2 minutes 44 seconds and 2 minutes 24 seconds remaining in the cycle. If a request to pump water occurs outside of 2 minutes 44 seconds, Check Cassette #5 occurs.	a contaminated steam generator or a weak pump.
Check Cassette #6	The steam generator temperature is more than 5°C higher than the chamber temperature.	Most probable causes are a blocked duct, a blocked solenoid valve, miscalibration or a pinched exhaust tube.
Check Cassette #7	The cassette temperature has dropped below 130.5°C during the sterilizing phase of the UNWRAPPED or WRAPPED Cycle, or below 117.5°C during the sterilizing phase of the RUBBER AND PLASTIC Cycle.	Most probable cause is a faulty solenoid valve.
Check Cassette #8	The chamber temperature is more than 5°C higher than the steam generator temperature.	Most probable causes are thermocouple miscalibration or very strong pump delivery.
Check Cassette #9	This is a special error message for the U.K. market. The chamber temperature has exceeded 139°C during the UNWRAPPED/ WRAPPED Cycle, or has exceeded 126°C during the RUBBER AND PLASTIC Cycle.	Most probable causes are a blocked or faulty solenoid valve or a pinched exhaust tube.
Service Needed	The steam generator temperature has exceeded 170°C, chamber temperature has exceeded 147°C, or the thermocouple is faulty.	Most probable causes are a blocked or faulty solenoid valve, a pinched exhaust tube, a broken thermocouple lead, an open, disconnected or defective thermocouple, a weak pump or a contaminated steam generator.
Check Cassette (without a number)	The cassette temperature has failed to drop to 103°C within a timeout period at the end of a cycle.	Most probable causes are a blocked exhaust duct in the cassette, a blocked or faulty solenoid valve or a pinched / kinked exhaust tube.

10. Statim 5000 Trouble-shooting – Cycle Faults

Cycle Fault Number	Description of Fault	Suggested steps for Correction of fault
Cycle Fault #1	The cassette temperature failed to reach 95°C within a time-out period.	This fault may be caused by a large cassette leak in conjunction with an extremely large load or a blown thermal fuse caused by weak pump delivery and/or contaminated steam generator or a faulty steam generator triac. If the triac has failed, the thermal fuse may have also failed. A faulty steam generator (steam generator resistance failed open) could also cause this fault.
Cycle Fault #2 *Software Revisions R1xx or R2xx only*	The cassette temperature failed to increase from 95°C to 100°C within a time-out period.	This may be cause by a major steam leak from the cassette, incorrect chamber temperature calibration or an extremely large load.
Cycle Fault #3	The cassette has failed to pressurize and achieve a temperature of 110°C within a time-out period	This may be caused by a faulty cassette seal, a damaged cassette or faulty solenoid valve (failed to close). Verify check valve and pressure relief valves for leaks. For PCB rev other than rev. 7.xx verify Vref to be 2.520V± 0.001V.
Cycle Fault #4	The cassette has failed to achieve sterilization conditions within a timeout period of the chamber first reaching 110°C.	This may be caused by a faulty cassette seal, a damaged cassette, improperly installed copper tubing, a failed or faulty solenoid valve (failed to close) , or improper alignment of the probe bracket. Verify check valve and pressure relief valves for leaks. For PCB rev other than rev. 7.xx verify Vref to be 2.520V± 0.001V.
Cycle Fault #5 *Software Revision R1xx only*	The software causes the pump to activate at predetermined times. If a request to pump water occurs outside of the predetermined time Cycle Fault #5 occurs.	This may be caused by a leaky cassette, a kink in the steam generator inlet tube, a leaking solenoid outlet valve, a weak pump and a very large load in the cassette.
Cycle Fault #6 *Software Revisions R2xx or R4xx*	The software has detected the filtered steam generator temperature 6°C greater than the chamber during the sterilizing phase of a cycle	The most probable causes are an obstruction caused by seal misalignment or foreign material in the seal channel, a need for thermocouple or steam generator calibration, an old or contaminated steam generator.

10. Statim 5000 Trouble-shooting – Cycle Faults

Cycle Fault #6 *Software Revision R5xx and R6xx*	The software has detected the filtered Validation thermocouple temperature 5°C greater than the chamber during the sterilizing phase of a cycle.	Check for kinked or pinched exhaust tubing and for visible steam leaks from the cassette seal, lid or tray. Check the solenoid and make sure the plunger is not sticking. Recalibrate validation thermocouple (former boiler calibration) or chamber thermocouple. Verify PCB (chamber temperature reading too low, for PCB rev other than rev 7.xx bad Vref).
Cycle Fault #7	During Sterilization phase of the cycle the cassette temperature has dropped below a threshold value.	This may be caused by a faulty solenoid valve (fails to close), a leaky cassette, a leaky pressure relief valve, a leaky check valve.
Cycle Fault #8 *Software Revisions R2xx or R4xx*	The software has detected the filtered steam generator temperature 6°C less than the chamber during the sterilizing phase of a cycle.	This may be caused by a faulty steam generator, the cassette thermocouple miscalibration, by a contaminated steam generator or a high output pump.
Cycle Fault #8 *Software Revision R5xx and R6xx*	The software has detected the filtered Validation Thermocouple temperature 5°C less than the chamber during the sterilizing phase of a cycle.	Check for a clogged duct in the left rear of the cassette tray. Check the solenoid for debris and make sure the plunger is not sticking. Recalibrate validation thermocouple (former boiler calibration). Check PCB (chamber temperature reading too high, for PCB revs other than rev 7.xx bad Vref, etc.). Check water pump (high output pump). Check water pump (weak pump).
Cycle Fault #9	N/A	
Cycle Fault #10	The cassette temperature has failed to drop to115°C during the Unwrapped or Wrapped Cycle OR the temperature has failed to drop to 110°C during the Rubber and Plastics Cycle in the purge conditioning stage.	Check for a clogged duct in the left rear of the cassette tray. Check exhaust tubing (kinked or tightly coiled). Check solenoid valve for improper connection, a failed solenoid valve (blown coil) or plunger sticking.
Cycle Fault #11	The cassette temperature has failed to drop to 102°C within a timeout period of the end of a cycle during venting.	Check for a clogged duct in the left rear of the cassette tray. Check exhaust tubing (kinked or tightly coiled). Check solenoid valve for improper connection, a failed solenoid valve (blown coil) or plunger sticking.
Cycle Fault #12	This indicates a problem with the temperature measuring system.	Possible causes are a faulty PCB, a disconnected, broken or faulty thermocouple lead.

10. Statim 5000 Trouble-shooting – Cycle Faults

Cycle Fault #13	N/A	
Cycle Fault #14 *Software Revisions R1xx or R2xx only*	The steam generator temperature is above 171°C during the sterilization phase of a cycle.	This may be the result of a blocked steam generator inlet tube, a failed or weak water pump, a failed pump or steam generator triac, faulty seal installation or failed solenoid valve.
Cycle Fault #15	The cassette temperature raised above the high threshold during the Sterilization phase of a cycle or above 138.6°C during conditioning or pressurizing phase of the cycle	Probable causes are a blocked duct in the cassette, a pinched exhaust tube leading to the waste bottle, or a faulty solenoid valve.
Cycle Fault #16	The steam generator temperature went above a threshold value.	This may be the result of a blocked steam generator inlet tube, a failed or weak water pump, a failed pump triac, failed steam generator triac, faulty seal installation or failed solenoid valve.
Cycle Fault #17-#18	N/A	
Cycle Fault #19	For software rev. R1xx, R2xx and R4xx the steam generator calibration is invalid. For software rev. R5xx and R6xx the validation thermocouple calibration is invalid. In both cases a new steam generator or validation thermocouple calibration is required.	This occurs when a new controller board or microprocessor has been installed. This may also happen when the unit has been subjected to a strong static discharge corrupting the memory. Calibrate the boiler / validation thermocouples
Cycle Fault #20 *Software Revisions R1xx or R2xx*	The pump has failed to pump water into the steam generator during a pre-vent pump time-out. The steam generator temperature was greater than 140°C for 3.6 seconds after the pump was activated to pump water to cool the steam generator.	This may be the result of a blocked steam generator inlet tube, a failed or weak water pump, a failed pump triac or steam generator triac, faulty seal installation or failed solenoid valve. Also may be the result of a defective water quality sensor (insufficient water in the reservoir)
Cycle Fault #21-#24	N/A	

10. Statim 5000 Trouble-shooting – Cycle Faults

Cycle Fault #25	The software has failed to detect a need to pump water within 90 seconds of the start of the cycle	The most probable cause is a blown thermal fuse due to weak pump delivery and/or a contaminated steam generator, or improperly connected steam generator leads (loose or unconnected). If the steam generator triac has failed, the thermal fuse may have also failed. Verify steam generator resistance (could be failed open)
Cycle Fault #26 *Software Revisions R1xx, R2xx or R4xx*	The sterilization phase has failed to start within 3 minutes of the cassette reaching the sterilization temperature. For software rev. R4xx CF26 is displayed when it occurred in three consecutive cycles (Cycle interrupted is displayed for the first two cycles). Cycle Fault 26 counter is reset whenever a successful cycle is completed.	This may be caused by improper boiler thermocouple calibration, by a contaminated steam generator, by a weak pump delivery or by a faulty solenoid valve. Also verify Vref to be 2.520V± 0.001V
Cycle Fault #26 *Software Revision R5xx and R6xx*	The sterilization phase has failed to start within 3 minutes of the cassette reaching the sterilization temperature. CF26 is displayed when it occurred in three consecutive cycles (Cycle interrupted is displayed for the first two cycles). Cycle Fault 26 counter is reset whenever a successful cycle is completed.	This may be caused by improper validation thermocouple calibration, by a weak pump delivery or by a faulty solenoid valve. For PCB other than rev 7.xx also verify Vref to be 2.520V± 0.001V.
Cycle Fault #27	The temperature of the steam generator failed to drop bellow a set-point temperature (150°C or 165°C) in a timeout period	Several conditions may cause this: weak pump delivery and/or out of water during a cycle, restriction to the pump inlet tube or a defective water quality sensor (sensor does not detect insufficient water in the water reservoir) or a contaminated steam generator.
Cycle Fault #72 *Software Revision R5xx <u>only</u>*	There is a communication error between the microprocessor and the Temperature Adapter Board (TAB).	Check the connection between the square microprocessor and the Printed Circuit Board (PCB). If an adapter board is used check the connection between the adapter board and the PCB. Look for bent or broken pins. Verify that Temperature Adapter PCB (TAB) is properly inserted and secured on the main Statim PCB.

10. Statim 5000 Trouble-shooting – Cycle Faults

Cycle Fault #90 *Software Revisions R6xx only*	Corrupted or not initialized chamber calibration value	This occurs when a new controller board or microprocessor has been installed. This may also happen when the unit has been subjected to a strong static discharge corrupting the memory. Calibrate chamber thermocouple.
Cycle Fault #98 *Software Revisions R4xx and up (includes R5xx and R6xx)*	Microcontroller fails to communicate with ADC (Analog to Digital Converter)	Hardware failure. MCU not inserted properly in the socket, extract MCU, and verify pins not to be shorted. Damaged ADC converter, replace PCB. If a PCB adapter is used, verify that PCB adapter is properly secured in the socket and that there are no bent pins. If PCB rev 2.x is in place make sure that C40 is removed.
"NO CONFIGURATION EEPROM"	Lack of communication between microcontroller and EEPROM	Hardware failure. MCU not inserted properly in the socket, extract MCU, and verify pins not to be shorted. Damaged or wrong inserted or missing EEPROM, replace software kit. Damaged controller PCB. If a PCB Adapter is used, verify that PCB adapter is properly secured in the socket and that there are no bent pins

10. Statim 5000 Trouble-shooting – Printer Messages

Printer Fault	Description of Fault	Suggested steps for Correction of fault
Message: PRINTER FAULT (if optional printer is installed)	Printer is not printing	This is caused by either a paper jam or a defective printer controller board.
"CYCLE ABORTED"	This error message is displayed on the printout only, followed by the message "NOT STERILE", as a result of the operator pressing the STOP button to stop the cycle or as a result of any other abnormal cycle termination, including CYCLE FAULT errors.	
"STOP BUTTON PRESSED"	The operator pressed the STOP button to stop the cycle. The LCD shows the message "NOT STERILE" as a result.	
"CYCLE INTERRUPTED"	This error is displayed on power-up following a power failure occurs during a cycle or whenever the power is turned OFF after an error occurred without pressing the STOP button to reset. (Rev. R200 level code) This message is displayed when the sterilization phase has failed to start within three minutes of the cassette reaching the sterilization temperature. If it occurs in three consecutive cycles Cycle Fault #26 is displayed. (Software Rev. R4xx and R5xx)	
"PRESS STOP TO RESET"	This message is displayed for all error faults. The user MUST press the STOP button on the keypad to reset the unit; otherwise the user will be unable to initiate another cycle.	
No message displayed	The printer does not work	Make sure that all printer cables are connected. Check connections at the Controller Board and the Printer Controller Board. The cable

10. Statim 5000 Trouble-shooting – Printer Messages

		is correctly connected if the time and date are shown on the LCD. Make sure that the printer is turned ON. Ensure that the paper is loaded properly. Check that the paper leaves the paper roll from the top of the roll. This means that the treated surface of the thermal paper will be in contact with the thermal print head. Other possibilities are a defective printer mechanism or a defective Printer Control Board.

11. Statim 2000S and 5000S Troubleshooting
Cycle Faults – Software Revision R4xx, R5xx and R6xx

Cycle Fault Number	Description of Fault	Probable Cause of Fault
Cycle Fault #1	The cassette temperature failed to reach boiling temperature within a time-out period.	This fault may be caused by a large cassette leak in conjunction with an extremely large load or a blown thermal fuse caused by weak pump delivery and/or contaminated steam generator or a faulty steam generator triac. If the triac has failed, the thermal fuse may have also failed. A faulty steam generator (steam generator resistance failed open) could also cause this fault.
Cycle Fault #2	Not used	
Cycle Fault #3	The cassette temperature failed to reach 110ºC within a time-out period.	This may be caused by a faulty cassette seal, a damaged cassette, or a failed or faulty solenoid valve (failed to close). Verify check valve and pressure relief valves for leaks. Temperature measurement failure. For Software revisions R4xx and R5xx verify Vref to be 2.520V± 0.001V.
Cycle Fault #4	The cassette has failed to achieve sterilization conditions within a timeout period.	This may be caused by a faulty cassette seal, a damaged cassette, improperly installed copper tubing, a failed or faulty solenoid valve (failed to close) , or improper alignment of the probe bracket. Verify check valve and pressure relief valves for leaks. Temperature measurement failure. For Software revisions R4xx and R5xx verify Vref to be 2.520V± 0.001V.
Cycle Fault #5 to #9	Not used	
Cycle Fault #10	The cassette temperature failed to drop to a floor condition during a pre-sterilization purge within a timeout period.	Check for a clogged duct in the left rear of the cassette tray. Check exhaust tubing (kinked or tightly coiled). Check solenoid valve for improper connection, a failed solenoid valve (blown coil) or plunger sticking.

11. Statim 2000S and 5000S Troubleshooting
Cycle Faults – Software Revision R4xx, R5xx and R6xx

Cycle Fault #11	The cassette temperature failed to drop to a floor condition within a timeout period at the end of sterilization during venting.	Check for a clogged duct in the left rear of the cassette tray. Check exhaust tubing (kinked or tightly coiled). Check solenoid valve for improper connection, a failed solenoid valve (blown coil) or plunger sticking.
Cycle Fault #12	This indicates a problem with the temperature measuring system.	Possible causes are a faulty PCB, a disconnected, broken or faulty thermocouple.
Cycle Fault #13 - #14	Not used	
Cycle Fault #15	The cassette temperature rose above a ceiling temperature outside the Sterilization phase of a cycle (during conditioning or pressurizing phase of the cycle)	Probable causes are a blocked duct in the cassette, a pinched exhaust tube leading to the waste bottle, or a faulty solenoid valve.
Cycle Fault #16	The steam generator temperature rose above a ceiling temperature.	This may be the result of a blocked steam generator inlet tube, a failed or weak water pump, a failed pump triac, failed steam generator triac, faulty seal installation, failed solenoid valve or a contaminated steam generator
Cycle Fault #17-#24	Not used	
Cycle Fault #25	The steam generator failed to heat up to a threshold temperature within 90 seconds of the start of the cycle.	The most probable cause is a blown thermal fuse due to weak pump delivery and/or a contaminated steam generator, or improperly connected steam generator leads (loose or unconnected). If the steam generator triac has failed, the thermal fuse may have also failed. Verify steam generator resistance (could be failed open)
Cycle Fault #26	Not used	
Cycle Fault #27	The pump failed to cool down the steam generator bellow a set-point temperature (150°C or 165°C) in a timeout period (during a “panic pump” condition).	Several conditions may cause this: weak pump delivery and/or out of water during a cycle, restriction to the pump inlet tube or a defective water quality sensor (sensor does not detect insufficient water in the water reservoir) or a contaminated steam generator.

11. Statim 2000S and 5000S Troubleshooting
Cycle Faults – Software Revision R4xx, R5xx and R6xx

Cycle Fault #28	The cassette pressure rose above a ceiling value.	Pressure measurement failure. Gross pressure and/or temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed valve, etc.)
Cycle Fault #29	Not used	
Cycle Fault #30	The cassette temperature failed to reach the sterilization temperature within 15 seconds of the theoretical cassette temperature calculated from the measured cassette pressure reaching the sterilization temperature.	Poor air removal during conditioning (exhaust blockage). Pressure and/or temperature sensor miscalibration.
Cycle Fault #50	For the Rubber and Plastics cycle, the chamber temperature dropped below the sterilization temperature, allowing for measurement error (i.e. Tchm < 121°C).	Chamber temperature sensor miscalibration. Poor air removal during conditioning (exhaust blockage). Not able to generate steam or a leak in the system
Cycle Fault #51	For the Rubber and Plastics cycle, the chamber temperature rose more than 4 C° above the sterilization temperature, allowing for measurement error (i.e. Tchm > 125°C).	Chamber temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed solenoid valve).
Cycle Fault #52	For the Rubber and Plastics cycle, the theoretical chamber temperature as calculated from the measured chamber pressure was more than 2°C below the measured chamber temperature, allowing for measurement error.	Pressure and/or temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed valve). Poor air removal (partial exhaust blockage).
Cycle Fault #53	For the Rubber and Plastics cycle, the theoretical chamber temperature as calculated from the measured chamber pressure was more than 2°C above the measured chamber temperature, allowing for measurement error.	Pressure and/or temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed valve). Poor air removal (partial exhaust blockage).
Cycle Fault #54	For the Rubber and Plastics cycle, the theoretical cassette temperature calculated from the measured cassette pressure was below the sterilization temperature, allowing for measurement error (i.e. Pchm < 204.8 kPa).	Pressure and/or temperature sensor miscalibration. Unable to generate steam, or there is a leak in the system.

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Cycle Fault #55	For the Rubber and Plastics cycle, the theoretical cassette temperature calculated from the measured cassette pressure was more than 4°C above the sterilization temperature, allowing for measurement error (i.e. Pchm > 232 kPa).	Pressure and/or temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed valve).
Cycle Fault #60	For a 134°C cycle, the chamber temperature dropped below the sterilization temperature, allowing for measurement error (i.e. Tchm < 134°C).	Chamber temperature sensor miscalibration. Poor air removal during conditioning (exhaust blockage). Not able to generate steam or a leak in the system
Cycle Fault #61	For a 134°C cycle, the chamber temperature rose more than 4 C° above the sterilization temperature, allowing for measurement error (i.e. Tchm > 138°C).	Chamber temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed solenoid valve).
Cycle Fault #62	For a 134°C cycle, the theoretical chamber temperature as calculated from the measured chamber pressure was more than 2°C below the measured chamber temperature, allowing for measurement error.	Pressure and/or temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed valve). Poor air removal (partial exhaust blockage).
Cycle Fault #63	For a 134°C cycle, the theoretical chamber temperature as calculated from the measured chamber pressure was more than 2°C above the measured chamber temperature, allowing for measurement error.	Pressure and/or temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed valve). Poor air removal (partial exhaust blockage).
Cycle Fault #64	For a 134°C the theoretical cassette temperature calculated from the measured cassette pressure was below the sterilization temperature, allowing for measurement error (i.e. Pchm < 304 kPa).	Pressure and/or temperature sensor miscalibration. Unable to generate steam, or there is a leak in the system.
Cycle Fault #65	For a 134°C cycle, the theoretical cassette temperature calculated from the measured cassette pressure was more than 4°C above the sterilization temperature, allowing for measurement error (i.e. Pchm > 341.2 kPa).	Pressure and/or temperature sensor miscalibration. Unable to depressurize cassette (blocked exhaust, failed valve).

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Cycle Fault #70	The time maintained by the internal timer of the processor didn't match the time maintained by the external real-time clock.	Transient electromagnetic disturbance (problem won't repeat). Damaged microprocessor or crystal (STATIM Controller Board). Damaged real-time clock or crystal (for software R4xx or R5xx pressure sensor interface board).
Cycle Fault #71	Pressure reading is outside the possible range	Misconnected, disconnected or damaged pressure sensor. For software R4xx or R5xx disconnected or damaged Pressure Sensor Interface Board.
Cycle Fault #72	Not used	
Cycle Fault #90 *Software Revisions R6xx only*	Corrupted or not initialized chamber calibration value	This occurs when a new controller board or microprocessor has been installed. This may also happen when the unit has been subjected to a strong static discharge corrupting the memory. Calibrate chamber thermocouple.
Cycle Fault #91 *Software Revisions R6xx only*	Corrupted or not initialized pressure calibration	This occurs when a new controller board or microprocessor has been installed. This may also happen when the unit has been subjected to a strong static discharge corrupting the memory. Calibrate pressure sensor.
Cycle Fault #98	Microcontroller fails to communicate with ADC (Analog to Digital Converter)	Hardware failure. MCU not inserted properly in the socket, extract MCU, and verify pins not to be shorted. Damaged ADC converter, replace PCB. If a PCB adapter is used, verify that PCB adapter is properly secured in the socket and that there are no bent pins
"NO CONFIGURATION EEPROM"	Lack of communication between microcontroller and EEPROM	Hardware failure. MCU not inserted properly in the socket, extract MCU, and verify pins not to be shorted. Damaged or wrong inserted or missing EEPROM, replace software kit. Damaged controller PCB. If a PCB Adapter is used, verify that PCB adapter is properly secured in the socket and that there are no bent pins

11. Statim 2000 Trouble-shooting

Printer Messages

Cycle Fault Number	Description of Fault	Probable Cause of Fault
Message "PRINTER FAULT" (If optional printer is installed)	Printer is not printing.	This may be caused by a paper jam, a failed printer or failed printer electronics. Check that power is ON, check connector attachments.
"CYCLE ABORTED"	This error message is displayed on the printout only, followed by the message "NOT STERILE", as a result of the operator pressing the STOP button to stop the cycle or as a result of any other abnormal cycle termination, including CYCLE FAULT errors.	
"STOP BUTTON PRESSED"	The operator pressed the STOP button to stop the cycle. The LCD shows the message "NOT STERILE" as a result.	
"CYCLE INTERRUPTED"	This error is displayed on power-up following a power failure occurs during a cycle or whenever the power is turned OFF after an error occurred without pressing the STOP button to reset. (Rev. R200 level code) This message is displayed when the sterilization phase has failed to start within three minutes of the cassette reaching the sterilization temperature. If it occurs in three consecutive cycles Cycle Fault #26 is displayed. (Software Rev. R4xx, R5xx and R6xx)	
"PRESS STOP TO RESET"	This message is displayed for all error faults. The user MUST press the STOP button on the keypad to reset the unit; otherwise the user will be unable to initiate another cycle.	

12. Statim Data Logger Troubleshooting

This troubleshooting addresses problems that may be encountered when operating the Data Logger. In this troubleshooting, MSD (Mass Storage Device) refers to both USB memory sticks and SD Flash cards. The headings, such as, "SAFELY REMOVE MSD <> MSD/FLASH DETECTED", refer to the display of multiple messages in alternation of one another on the Stat*im* screen.

MSD/FLASH = Mass Storage Device/Flash Card. ie; SD Memory Card or USB Flash Drive

T1. If display reads:

MSD NOT CONNECTED <> INSERT MSD/FLASH

Follow the steps below to ensure everything is setup properly.

1. Check the serial cable connection.
2. Check the power connection.
3. Ensure the lower red LED is lit. It is located between the Data Logger's serial port and power input.
4. Check that the Mass Storage Device (MSD) is properly inserted in the appropriate slot of the Data Logger.
5. Repeat the instructions for "Installing the SciCan Data Logger on your Statim".

T2. If display reads:

SAFELY REMOVE MSD <> MSD/FLASH DETECTED

The MSD/Flash can be safely removed without affecting the data.

T3 If display reads:

MSD/FLASH FULL <> REPLACE MSD

The MSD is full. Export the data.

T4. If MSD has: Missing lines of Data on MSD/FLASH

- Refer to the STATIM screen to confirm successful sterilization.
- Reset the Data Logger by unplugging its power, disconnecting the MSD and waiting 10 seconds. Then re-connect the power adapter and insert the MSD into the Data Logger.
- If the problem persists, contact the SciCan Service Center.

T5. If MSD has: The file or directory in the MSD is corrupted or unreadable.Corrupt or unreadable files and/or directories

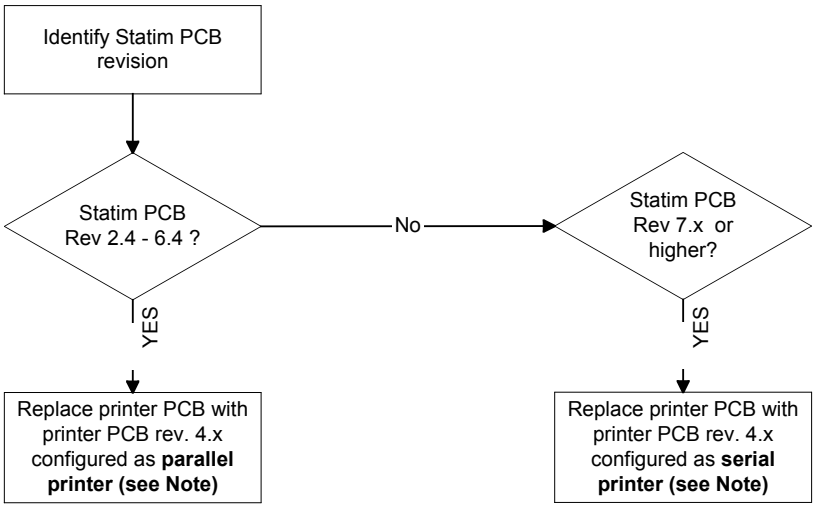
- Refer to the STATIM screen to confirm successful sterilization.
- The MSD may have been unplugged while data was being written to it. The MSD should not be unplugged until after the display shows:

SAFELY REMOVE MSD <> MSD/FLASH DETECTED

- The corrupted files or directories may be lost. Reformat the MSD on your computer.

13. Printer Interface Board rev 4.x Installation Instruction

When replacing the PCB of a Statim 5000(S) with printer with a rev 7.x PCB, the printer PCB has to be upgraded to rev 4.x. Below are the instructions for setting up the printer PCB:



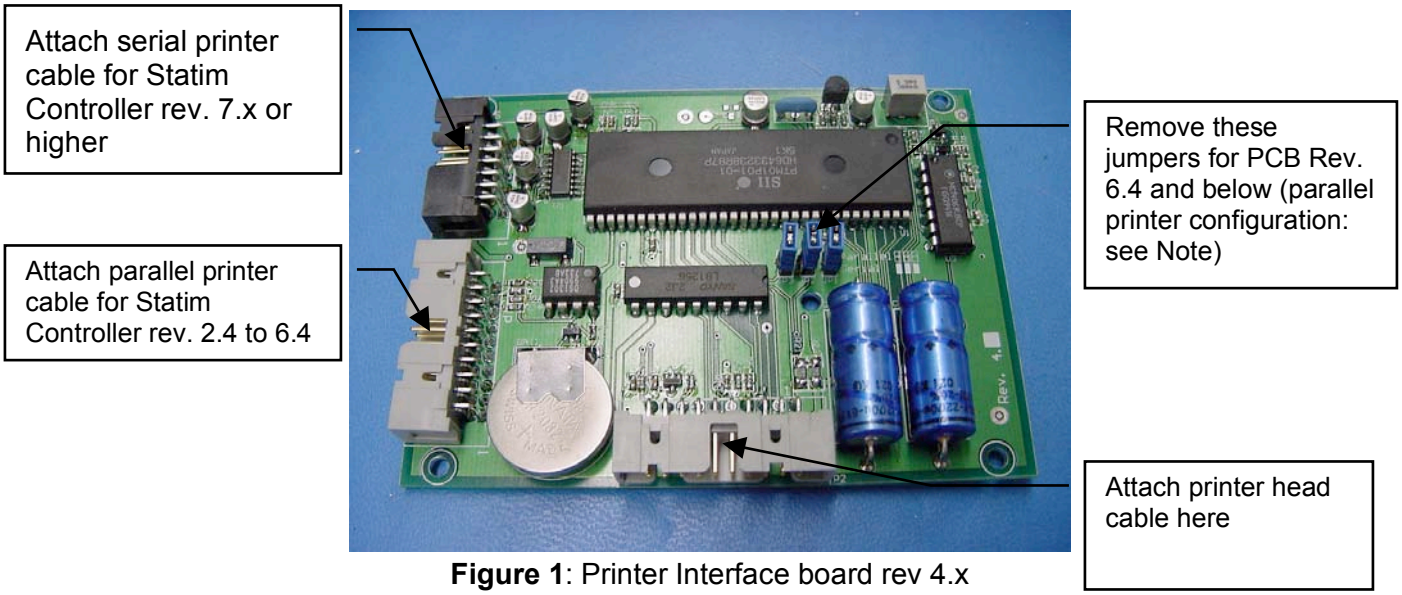


Figure 1: Printer Interface board rev 4.x

Note:

- Jumpers ON at JP1-JP3 – serial printer configuration
- Jumpers OFF at JP1-JP3 – parallel printer configuration